



An important aid to vessel navigation and collision avoidance, Sonardyne's Navigation and Obstacle Avoidance Sonar (NOAS) images the seabed ahead of a vessel to detect potential underwater hazards. Using sophisticated bow-mounted transducers, NOAS displays water depth, sub-surface obstacles and features by creating an accurate 3D model of the underwater environment. The model is displayed relative to the vessel, overlaid on nautical charts in real-time, providing the crew with an easily interpreted image of the underwater topography the vessel is passing through.

SYSTEM OVERVIEW

NOAS is a low power, forward-looking sonar that can be operated as a standalone unit or be integrated into a vessel's navigation system.

The sonar scans the water column and builds a 3D model of the seabed and submerged objects ahead of the vessel. The intuitive display informs the crew of the seabed terrain and any potential underwater hazards to a range of up to 600 metres over a 90 degree field of view. NOAS also has an operating mode for navigation and underwater intruder detection capability out to a range of 1,500 metres over a 180 degree field of view.

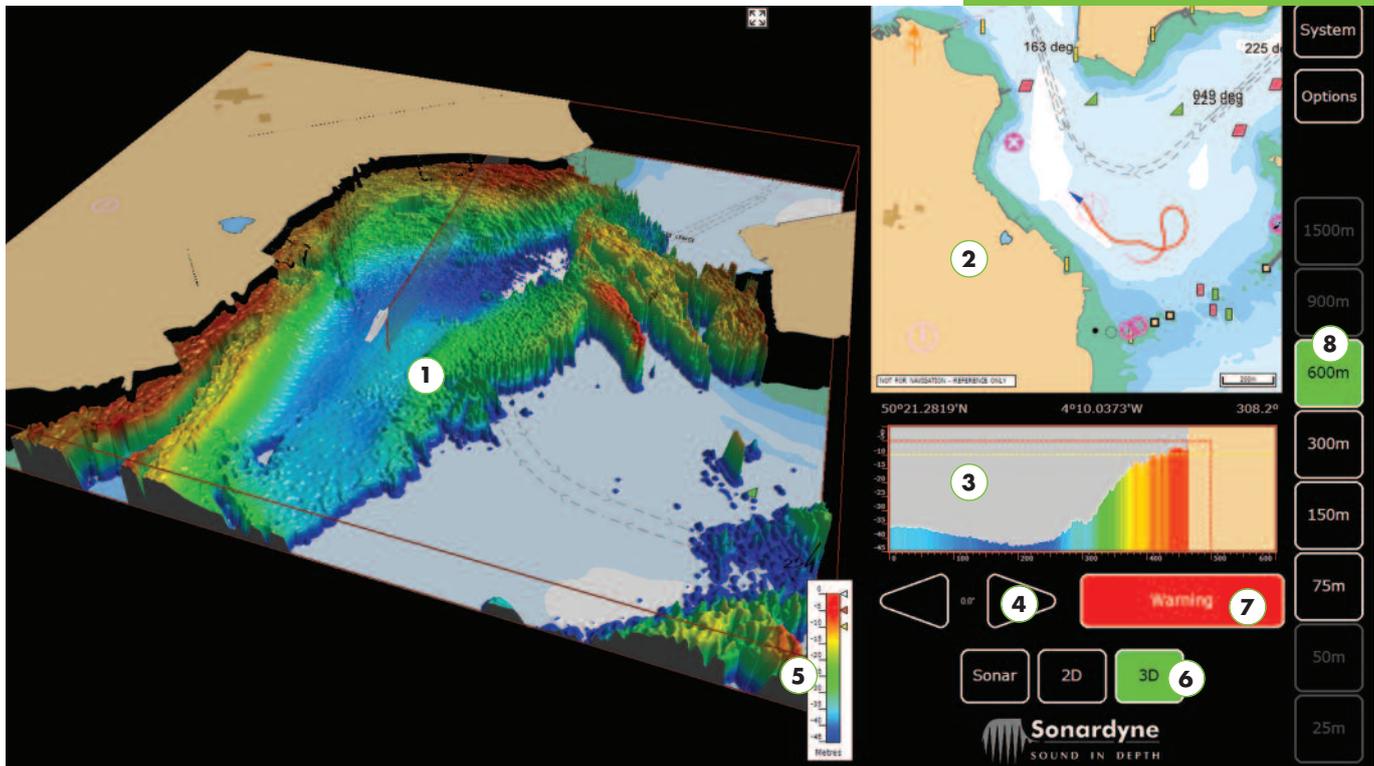
NOAS can operate as an independent system or feed fully-processed sonar images into, and be controlled by, the vessel's integrated navigation system. This allows the crew to customise the operator display to meet the specific needs of the vessel and its mode of operation.

Consisting of two sonar arrays that are mounted in the bow of the vessel, NOAS is designed to be retro-fitted to existing vessels as well as new vessels. Comprehensive engineering support and advice is available from Sonardyne to support installation and commissioning.

SONARDYNE NOAS NAVIGATION AND OBSTACLE AVOIDANCE SONAR

WHAT YOU NEED TO KNOW

- Multi-purpose forward-look sonar for commercial and military vessels, private yachts, cruise ships and manned underwater vehicles
- 3D seabed mapping ahead of the vessel up to 600 metres
- Sonar navigation to 1,500 metres
- 3D obstacle and ground avoidance
- Alerts operator to shallow water and potential hazards
- History of vessel passage maintained for manoeuvring
- 180 degree intruder detection
- Full bridge integration
- Suitable for new-build and retro-fit



NOAS OPERATION

NOAS scans the water column ahead of the vessel in both vertical and horizontal planes to provide a 3D model of the seabed and objects in the water column. This is displayed in an intuitive user interface that can be manipulated by the operator to offer alternative views of the water column. The display is designed to be used to aid navigation, showing the water depth and potential underwater hazards overlaid in real-time with the vessel's position and chart information. The screenshots above are representative of NOAS' 3D operating mode, with the Main View (1) window illustrating how sonar data builds a model of the underwater environment.

Alerts can be configured to warn of potential collision hazards or shallow water. These can be based on depth, distance from the vessel and time to impact. Multiple alerts can be programmed and are displayed in the profile view and depth scale.

Sonar imagery is temporarily retained on the display providing the operator with a recent history of the vessel's passage. This feature can be particularly useful when manoeuvring as the depth of the water and potential hazards are displayed even when outside of the sonar's current field of view. The chart layers can be enabled and disabled. In addition, the operator can also choose to display range rings or range markers as required by the vessel's crew.

A window in the display shows a profile view of a slice through the depth data ahead of the vessel. The profile can be steered to port or starboard by the user.

The Overview Window (2) shows the current position and historical track of the vessel on a smaller scale North-up chart, along with the vessel's current latitude, longitude and heading, as received from the ship's navigation aids. NOAS can also have a 2D display which is colour-coded to represent depth with blue being deepest and red for shallow water or objects.

NOAS HARDWARE

The NOAS underwater hardware consists of a sonar head and a projector. Sonardyne can also provide a mounting frame to enable NOAS to be easily installed in a ship's bow. Sonardyne's highly experienced engineering team can work with owners to design bespoke mounting arrangements.

The main subsea housing contains the receiver array and all the front-end electronics and processing. NOAS feeds fully-processed sonar images to the NOAS processor located on the vessel's bridge. The optimum position to mount the NOAS system is behind an approved and tested, acoustically transparent 'window' in the vessel's bow.

NOAS User Interface

- 1 Main View Window
- 2 Overview Window
- 3 Depth Profile
- 4 Profile Steering
- 5 Alert Thresholds
- 6 Display Modes
- 7 Alert Level
- 8 Range Settings



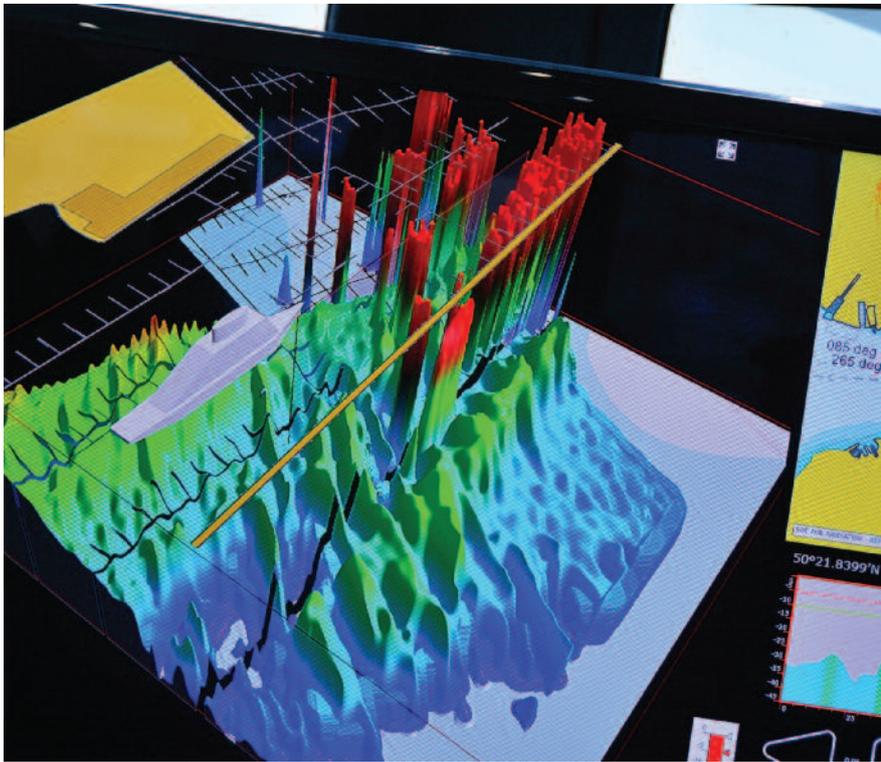
The way ahead for vessel navigation

When navigating poorly charted or unfamiliar areas, commercial ships, expedition cruise ships, private yachts and naval vessels remain vulnerable to groundings and collisions with submerged objects.



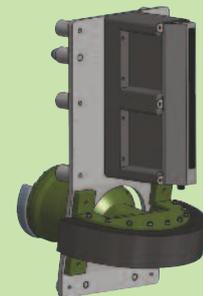
Integrated intruder detection

Uniquely, NOAS offers an intruder detection capability to warn of divers approaching the vessel.



Sonar arrays

The main subsea housing contains the sonar array and all the front end electronics and processing. A separate projector is used to provide the 3D capability.



NOAS PERFORMANCE SUMMARY

FEATURE

Range / Field of View	75m, 150m, 300m, 600m, @ 90° (3D Imaging) 25m to 150m x 180°, 300m @ 120°, 600m to 1500m @ 90° (Obstacle Avoidance) 1,500m @ 180° (Intruder Detection mode)
Operational Speed	Up to 25 knots (Depending on installation method)
Weight in Air	95 kg (Sonar array), 11.5 kg (Projector)
Chart Overlay	ENCX. Supports ENC (S-57), ARCS, NOAA RNCs
Bottom Mapping Ratio	Up to 20x water depth
Maximum Depth Detection	50 metres below keel
Power Requirements	<150 Watts
Operating Frequency	70 kHz with 20 kHz bandwidth
Maximum Output Power	208 dB re 1µPa @ 1m
Angular Accuracy	~0.2°
Roll/Pitch Stabilisation	±20°
In-Water Target Ping Stabilisation	Yes
User Definable Automated Alarms	Yes
Display of Ship's Navigation Information	Latitude, Longitude and Heading
Operating System	Windows 7



SUBSEA TECHNOLOGY

Global Headquarters

T. +44 (0) 1252 872288
F. +44 (0) 1252 876100
sales@sonardyne.com

Singapore

T. +65 6542 1911
F. +65 6542 6937
asia.sales@sonardyne.com

Aberdeen, UK

T. +44 (0) 1224 707875
F. +44 (0) 1224 707876
sales@sonardyne.com

Rio das Ostras, Brasil

T. +55 22 2123 4950
F. +55 22 2123 4951
brasil.sales@sonardyne.com

Houston, USA

T. +1 281 890 2120
F. +1 281 890 7047
usa.sales@sonardyne.com

**24 Hour Emergency
Telephone Helpline**

T. +44 (0) 1252 877600
support@sonardyne.com